

very much money in buildings and equipment at the start, but it pays to keep the farm and equipment in attractive appearance. Those who start in the business slowly and thoughtfully are usually the ones who succeed best in the end. The man who buys a few choice grades and a pure-bred sire and gradually learns to creep before he walks is more likely to succeed in the dairy business than the man who has neither time nor patience to study the breeding problems while working with a few animals. The beginner, no matter how well posted in other lines, will need to go slow at first in order to learn all the tricks of breeding and feeding dairy cattle, but he can rest assured that he will receive good profits for all his time and study.

CORN-EAR WORM EASY TO CONTROL

Several troublesome insects of field and garden happen to be in such location in the late fall that we can reach them by stirring the soil. One or two of them can be fought in almost no other way. The pest that hits the mark most closely is the corn ear worm which has caused much damage in different sections of the country the past summer. When infesting corn it eats its way along within the husk, devouring the young and tender kernels and silk. As it works its way down into the ground the worm fills the hole behind it with soil. But once at a depth of 3 or 4 inches it turns and makes a short open gallery, part way to the surface. Then it retires to the bottom of this and remains until it becomes a moth which does not come out again until next spring. Now, if you send a plow through the field in late fall you will accomplish very good results. This buries the pupa of the moth beneath solid earth, which later is compacted by winter and spring rains. The moths are thus effectually imprisoned, and never reach the surface to lay eggs and start the life round once more. Weather conditions or demands of crop rotation may make fall plowing out of the question, but if it can be done, there is much to be gained.

CROP ROTATION AND FERTILIZATION

The Ohio experiment station has made a study of the application of fertilizers to rotative croppings. Their experiments indicate that with crops grown continuously the cost of fertilizer has been greater than the value of the crop produced. Where grains have been grown in rotation with clover, the cost of fertilizer has been recovered, with a margin to spare. In growing cereals continu-

ously the recovery of fertilizer applied is never in excess of 60 per cent. Nitrogen seems to be the first element exhausted in continuous grain culture. Grains growing in rotation with clover recover the nitrogen applied and a part of that stored up by the clover. The conclusion is reached that at the present prices for grain and fertilizers the use of commercial fertilizers, and even barnyard manure, if valued on the same basis, is not profitable on wheat, oats and corn, except when those crops are grown in systematic rotation with clover or some other nitrogen collecting crop. The poorer the soil the smaller the probability of profitable crops by the use of artificial fertilizers. Any scheme of rotation should have the growing of at least one leguminous crop in its plan. By this means large gains of nitrogen may be made from the air. Potash and phosphoric acid, unless already in the soil, must be supplied by commercial fertilizers. In case of very poor soils it is not advisable to remove the crops, unless the manure is returned, until a fair state of fertility has been reached. Stock raising, dairying, and poultry raising are profitable lines of agriculture to carry on in a scheme for improving the fertility of poor soils.

HOW TO RAISE CORN

A Jackson county, Ohio, farmer, who has been unusually successful in his excellent yields of corn, practices a system of tillage and cultivation for which he gives the Ohio experiment station full credit. He is now using a rotation of corn, rye and clover, cutting the rye for hay. He thinks there is no crop like red clover for a soil builder, a feed for dairy cows, a hog pasture, and for making a sod for the next corn crop. He plows his clover sod twelve inches deep, paying little attention to the amount of yellow clay subsoil that is turned up in the process. This is because he does not believe in turning a wide furrow though it takes much longer to plow a given area. The sod is edged and in the thorough preparation which he gives the plowed land with a disk harrow and a drag the humus and organic matter are well mixed with the subsoil, making an excellent seed-bed. He believes in winter plowing. In cultivation of the corn he uses a disk harrow for the first two times. The machine is made with the two sets of disks a foot apart, permitting its use like a two-horse cultivator. The next three workings are with a spike-tooth cultivator, while the last work is done with a cultivator having six shovels set by the use of a wheel to a depth of two inches. In this way the cowpeas which he always plants in the corn can be sown. In 1912,

ten acres of hill land that with its 30 per cent slope had been washed of its fertility until it had yielded on an average of 12½ bushels per acre in 1906, produced 1,100 bushels of corn under his improved methods of farming.

CHEESE MAKING FROM BUTTERMILK

In a recent bulletin of the Wisconsin station, J. L. Samuels calls attention to the unnecessary waste of buttermilk, and describes for the first time a method by which cheese can be made from pure buttermilk, which has about the same value, pound for pound, as lean beefsteak, which sells at twice the price. The cheese can be eaten alone like cottage cheese, or it can be seasoned with salt, pepper and paprika or mixed with chopped pickles, olives and nuts. It can also be used in salads. On account of its smooth texture it can be spread like butter. Bakers prefer buttermilk cheese on account of its smooth texture for the same purpose for which they formerly used cottage cheese. Because buttermilk can not be made into cheese by the same methods used in making cottage cheese, the utilization of pure buttermilk for cheese making has until recently been regarded as impossible. Mixtures of skimmilk and buttermilk are much easier to handle for making cheese than pure buttermilk, but the practical objection to the use of such a mixture is that every year fewer creameries have any skimmilk, the separating being done on the farm.

MIXING SLED FOR CONCRETE

An Ohio farmer uses a mixing box and hoes for making concrete mixture in preference to the platform and shovels. He devised a mixing box on runners to move the concrete (one horse) to the forms. Having a retaining wall to build, he had two piles of gravel conveniently dumped, located a cement shanty in line, and used the mixing box on runners to move the concrete. He used a bottomless measuring box at the gravel piles (run of pit); this box being designed for a "one-bag mixture." The bag of cement was thrown on the gravel as the sled passed the cement shanty, and water was added from barrels on sled near the point of work. This farmer found that on account of the easy mixing plans the job of concreting was the easiest he had ever done. By the use of the mixing sled and horse to move concrete, and by using one or two-bag mixture and bottomless measuring box, the farmer and his help also found that they could mix concrete and get it into the trench more cheaply than gangs with a cement mixer and wheelbarrows.

VALUE OF TOADS

The common garden toad has a definite value among European farmers and gardeners, and is rapidly coming into his own in this country. In a bulletin recently issued by the Nebraska experiment station, the full measure of his worth is explained. It says: "Superstition and tradition have invested the toad with repulsive and venomous qualities. As a matter of fact, B. F. Swingle, a noted authority, declared the common toad has a cash value of \$10 to the man with a garden. Examination of the stomachs of 149 toads proved that 98 per cent of their food was of the following character: Bugs, beetles, spiders, potato bugs, thousand-legged worms, weevils, tent caterpillars and grasshoppers. These were eaten by thousands. Wire worms, army worms, crickets, cucumber bugs and rose bugs were relished

just as well. In one stomach seventy-seven thousand-legged worms were found. One toad in captivity snapped up eighty-six flies in ten minutes."

WIRE CUTS

Farm animals are always more or less liable to injury from wire cuts, and it is important to give quick attention to all such injuries. When the wound is severe it will pay to employ a veterinarian to dress the wound. Where the services of a good veterinarian can not be obtained, farmers will have to handle the case themselves. The ordinary wound will heal if not interfered with. This interference may be from germs, parasites, meddling with the wound, on the part of the man or animal itself. The first thing to do is to stop the hemorrhage. This can be accomplished by a tight band of clean, white muslin, applied either over or above the wound. A thread may be used under the artery by using a needle, and tied. Do not use flour, dirt, cobwebs or anything of that sort on the wound. They are unnecessary and may produce a serious infection of the wound. Having checked the bleeding, remove the clots of blood and cut off the ragged edges of tissue with clean shears. A pan of antiseptic solution should be provided, and one of the best antiseptics on the farm is creolin. Add a teaspoonful of this to a pint of water that has been boiled and use it on the wound two or three times a day. Place the knife, shears, etc., in this solution, and wash the hands before beginning to dress the wound. See that there is good drainage for the wound and do not tie up with covering of any kind. In about a week it may be well to change to dry dressing. It will be well to get in communication with a good veterinarian and get his advice in the case from this time on. It is better not to sew up ragged cuts. Remember the principal thing is to get the wound healthy at the start and then it will heal up with very little interference.

ASPARAGUS CULTURE

The application of a heavy coating of stable manure in the fall is the practice of a good many asparagus growers, while others allow the tops to stand to hold the snow through the winter and put the manure or fertilizer on in the spring. Either method will give good results, but the bed covered with manure in the fall will start a little earlier in the spring than the one exposed to heavy freezing. In the spring the bed is cleared of tops, weeds and other matter and made fine and mellow with the spading fork or harrow. Most growers ridge the soil over the crown of the plants to enable them to cut shoots as they appear above the ground without injury to the crown, but this is not necessary as the part of the shoot below the surface is hard and woody, and nothing is gained by cutting low.

STORING VEGETABLES

Onions should be stored in a loft for best results. If stored in a cellar they will sprout to their injury. A few parsnips intended for winter use may be stored in sand in the cellar, but it is best to leave most of them outdoors for later use, as freezing will sweeten them. Store potatoes in bins one foot or eighteen inches deep, raised somewhat from the floor. They will be likely to rot if they are bruised by rough handling. Freezing will not hurt salsify and horseradish, and the main lot may be left out where grown. A few should be dug and put in earth

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